

Remarks on Worms in Anthelmintic Medicines

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January 10th 1827

Filed March 1827
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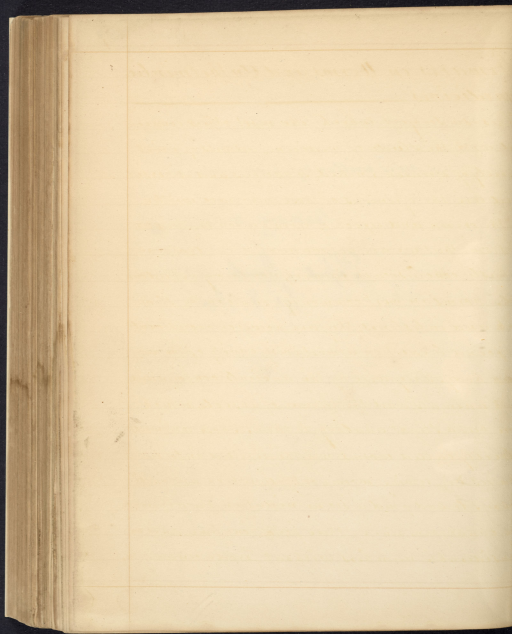
Notes written by J. B. Hall

January 1887

Apr. 1887
H. B. Hall

Remarks on the nature and extent of the human
understanding

is a subject which has not only been
the study of ancient philosophers but
of modern writers, who have written
the opinions of those who have written
the origin and extent of human understanding
that we are not to be mistaken in drawing
any conclusion in favor of any theory yet advanced
on this most common but obscure subject. The
ancients in general, they are known to have
been in a great measure, in a great variety of the
ancients they were by the ancient philosophers
and the theory of Aristotle is not
in a slight analogy to those of the ancients
and the moderns may be divided into two
classes, those who are in the right and those
who are in the wrong, for the moderns are not
in the right, and the ancients are not in the
right, and the moderns are not in the right.



1
Remarks on Worms and Anthelmintic medicines

This is a subject which like most others connected with the study of medicine, admits of great variety of opinion; indeed so various and diversified are the opinions of those who have written on the origin, and effect of worms upon the human system, that we are not warranted in drawing a hasty conclusion in favour of any theory yet advanced. Worms are most commonly found in the stomach and intestines; they are however, occasionally found to exist in almost every cavity of the human body. They were by the ancients confounded with animals, and the larvae of insects, which bore but a slight analogy to them. Those animals strictly called worms, may be divided into two classes viz, helmin worms, or those which are indigenous to, and find a proper nidus in the alimentary canal, remaining there for a long time, and in considerable numbers without producing disease,

And secondly, Entelic worms, or those which being accidentally taken into the stomach, and not finding a proper habitation, soon excite irritation and occasion their expulsion. Alvine worms or those which are indigenous to the human stomach and intestines, are divided according to their form, into the round and flat, each of which constitutes a genus. Of the round worm there are three species, first, the *Ascarides lumbricoides* or long round worm; This worm in appearance so nearly resembles the common earth worm, that it has been pronounced by some naturalists the same; by a strict examination, however, the difference is easily perceived; the head of the tere is incurvated, with a transverse contraction beneath it, the body yellowish and transparent, vivacious, when arrived at its full size a foot in length, frequently found in great numbers in the small intestines, seldom in the large ones or stomach; when found in either of these latter situations

they are probably attempting to make their escape out of the system, through the oesophagus or rectum, This intestinal worm differs from the common earth worm chiefly, in being round, of a pale red colour, its head is furnished with three vesicles placed triangularly, and in moving it curls its body into circles, from which it extends its head, - while the earth worm "is flat towards its tail, and has bristles on its under side, which it erects at pleasure, and it moves by a continuous course of action propagated from ring to ring; its colour is dusky red, and its head has but one vesicle. Secondly, The *Trichocephalus*, *trichuris* or long thread worm is about two inches in length, the tail or smaller part, is double the length of the body or thicker part; the head is obtuse, with a proboscis which it can protrude at pleasure, it resembles the turnip in colour, This worm is not so frequently found in man, as the other species of round

worm; its proper habitation is said to be the caecum; it has, however, been found in every part of the alvine channel, sometimes in great numbers; it is not peculiar to man, but has also been discovered to exist in the horse, boar, fox and other animals; Gozza believes the proboscis to be the male organ, observation has not, however, confirmed the opinion. Stoll, The *Ascarides* or *Ascaris vermicularis* are thus described by Good: "The head of the thread worm is subulate, nodose, and divided into three vesicles, in the middle of each of which is an aperture, through which it receives nourishment, skin at the sides of the body finely crenate or wrinkled, tail finely tapering to a point; The female has a punctiform aperture just below the head, through which it receives nourishment - gregarious, viviparous, about half an inch long; In general appearance it resembled small white threads cut in pieces, from whence the name thread worm is

derived. The proper habitation of this worm is the rectum; they are, however, sometimes found in the stomach, from which circumstance they have been called maw worms; they have also been discovered in the colon and puden-
da, having escaped from the rectum to these latter situations; The sexes of this species of worm are distinct, but the male organs have not been discovered. — By Doct. Parr and Chapman it is said there is but one flat worm, and that the *tænia solium* of Linnaeus and the *tænia oculis marginalibus* of Doct. Cooper, are nothing more than varieties of the same worm; Good describes two flat worms under the names of *tænia solium* or long tape worm, and *tænia vulgaris* or broad tape worm. The *tænia solium* is thus described by him; The articulations are long and narrow, with marginal prongs by which it attaches itself to the intestines, one on each joint generally alternate, ovaries arbo-

ndent, head with a terminate mouth surround-
 ed with two rows of radiate hooks or holdens,
 and a little below on the flattened surface are
 four tuberculate orifices or suckers, two on
 each side, tail terminating by a semicircular
 joint without any aperture. It has been known
 to measure two hundred feet, found rolled up
 in the small intestines like a bunch of tape,
 where it probably feeds on chyle; it is frequen-
 tly solitary, sometimes two or three are found
 existing in the body at the same time, ad her-
 ing very closely to the intestines; It is ovipa-
 rous and discharges its numerous eggs from
 apertures near the joints. They are said to be
 hermaphrodites; their motion is produced
 by the successive contraction of their joints;
 The joints are sometimes broken off, and portions
 of the worm discharged, these detached portions
 resemble gourd seeds, from whence the name cucur-
 bitinus; they are for a time possessed of life in-

dependent of the heads it is said that these detached portions, and the part to which the head belongs, are both capable of reproducing parts which have been broken off, but this opinion is not fully established. The head will still exist after a great portion of the body has been discharged. The *taenia vulgaris* or broad tape worm, has broad and short articulations, with a pore in the centre of each, and ovaries round them, body broader in the middle and tapering towards the extremities, head resembling the last, but narrower and smaller, tail ending in a round point; Like the *solium* it inhabits the upper part of the small intestines and feeds on the already animalized chyle. This worm is seldom found more than fifteen or twenty feet in length. There is a variety of these animals with a double row of osculae down its sides. Both kinds of the tape worm are whitish, but the latter darker of the two. There

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The first of these is the
fact that the world is
not a uniform whole
but a collection of
many different parts
each of which has its
own peculiar character
and its own peculiar
history. The second
fact is that the world
is not a static whole
but a dynamic whole
which is constantly
changing and
developing. The third
fact is that the world
is not a simple whole
but a complex whole
which is made up of
many different parts
each of which has its
own peculiar character
and its own peculiar
history. The fourth
fact is that the world
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history. The seventh
fact is that the world
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history. The eighth
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but a dynamic whole
which is constantly
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developing. The ninth
fact is that the world
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but a complex whole
which is made up of
many different parts
each of which has its
own peculiar character
and its own peculiar
history. The tenth
fact is that the world
is not a uniform whole
but a collection of
many different parts
each of which has its
own peculiar character
and its own peculiar
history.

are three other species of worms, that are occasionally met with in the human body, but are not peculiar to it, being much more common to animals: they have not been very accurately described. The first is the *fasciola* or *flake*; this worm is found abundantly in quadrupeds of almost every kind, in fishes, reptiles and even in worms themselves, of a larger species; it is sometimes, though not frequently found in man, its ordinary habitation is the stomach and alvine canal, but in swine, deer & sheep, its favourite haunt is the liver; it probably finds its way to that viscus, through the gall duct, where it multiplies abundantly and replenishes it. The body of the *flake* is flat-tish with an aperture or pore at the head, oviparous and hermaphrodite, ovaries lateral. The second variety is the *ascariscarrabaeus* or beetle grub. They originate from the ova or eggs of the beetle or *scarabaeus*,

The first of these is the fact that the
 world is not a uniform whole, but a
 collection of parts, each of which has
 its own life and development. The
 second is the fact that the world is
 not a static whole, but a dynamic
 whole, in which everything is in a
 state of constant change and
 development. The third is the fact
 that the world is not a homogeneous
 whole, but a heterogeneous whole,
 in which different parts have different
 characteristics and qualities. The
 fourth is the fact that the world is
 not a simple whole, but a complex
 whole, in which many different
 factors are at work. The fifth is the
 fact that the world is not a closed
 whole, but an open whole, in which
 there is constant exchange and
 interaction with the environment.

introduced by accident into the rectum, and as these animals delight in, and feed on dung their eggs find in that viscus a convenient nidus, and when hatched are involved in luxury.

These grubs are said to have "six feet, are annulate, hairy, vesicular at the end of the abdomen, and furnished with a horny head"—

The third species the oestrus or bot, is thus described by Good—"Of a round figure, pale green, tail obliquely truncated, head tapering, mouth horny with two lips, and two recurved black claws on each side of the mouth," found convoluted in the mucus and faeces, of man, but far more frequently of other animals, and particularly of the horse; They are produced by the larvae of the oestrus, breeze or gad fly.—

Those worms which are occasionally taken into the stomach, by accident, and not finding a proper nidus cannot remain long in their unnatural situation without producing disease.

The species belonging to this class are so numerous and diversified, that it is almost impossible to describe or even innumerate them; indeed we might find authority for asserting that almost every species of reptile, has been taken in, and for a time nourished in the human stomach; thus we frequently hear of fishes, eels, snakes &c. being evacuated, which had for sometimes inhabited the alimentary canal; most of these cases, however, come to us from doubtful authority. — I shall confine my observations on this subject, to two worms viz, the gordius or hair worm, and the hirudo or erratic leech. The first of these is the seta equina or horse hair worm of the ancients; it inhabits stagnant waters, is from three to five inches in length, twisted into various shoals and contortions, colour pale brown with dark extremities. This worm is described as common to the low situations of Lapland, and according to Linnaeus is occasionally taken into the stom-

each of the inhabitants, with water, in a short time after being swallowed, producing most violent gripping, the patient rolls upon the ground in most excruciating torment, discharging bloody urine after several hours the pain terminates in a profuse ptyalism, which continues fifteen or twenty minutes. The Erratic leech is said to be taken into the stomach when small, with the water in which it is contained. The particular species of this animal, which has thus been taken into the human body, has not been very accurately determined, on account of the difference in size and appearance, which it evinces from its kindred species, occasioned by the luxuriance of its habitation; it is however supposed that both the medical and horse leech have been evacuated from the alimentary canal; It is not easy to believe that an animal of this description could long resist the influence of the gastric juice of the stomach, when

The public spirit of the American people
has been the cause of the most
valuable and successful
contributions to the
cause of the oppressed
in every part of the world.
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to the cause of the
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of the world.

that organ is in a healthy condition, but entering it when in a weak or dyspeptic state, they seize upon its coats, and riot in luxury until they grow to an enormous size and differ so much from their original character, that they are not readily recognized as belonging to any species:— Thus we find recorded by Lister the case of a patient, who had for four months been tormented with the most exquisite and almost insupportable pain, about his stomach and right side, which many times threw him into horrors and ague-like chillings, and was the sickest man continued he "I never said not to die," evacuated through the oesophagus a dark green spotted worm resembling a horse leech, together with two pounds of coagulated blood; the size of this worm was four inches long and three in circumference, had three fins on each side near the head, with a forky finny transparent and extensible tail. Phil. Trans 1681-2

Two very interesting cases are given relative to

The first of these is the fact that the
 system is a very simple one, and that
 it is a very easy one to understand.
 The second is the fact that the
 system is a very easy one to use, and
 that it is a very easy one to learn.
 The third is the fact that the
 system is a very easy one to teach,
 and that it is a very easy one to
 learn. The fourth is the fact that
 the system is a very easy one to
 use, and that it is a very easy one
 to learn. The fifth is the fact that
 the system is a very easy one to
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 one to learn. The tenth is the fact
 that the system is a very easy one
 to use, and that it is a very easy
 one to learn.

these worms, the one by Mr Paisley Ed med. essay: the other by Doct Bond of Philadelphia. In the case related by Mr Paisley there were two worms discharged from a patient per rectum; it was supposed they had inhabited his stomach for a long time, their expulsion was ultimately occasioned by a wound, received by the patient in the breast, with a small sword; about the third day after receiving the injury he began to experience some distressing symptoms—these after continuing with many variations for several weeks, were relieved by the discharge of a worm; the head of which Mr Paisley compares to that of a horse leech, measuring a foot in length and an inch and a half in diameter, lifeless, but engorged with blood; a short time after, another of the same appearance, but still larger, was discharged from the same patient. The case related by Doct Bond was that of a female patient, who having long laboured under an hepatic disease, which gradually changed to violent helminthic symp-

found in the stomach; these suddenly vanished, and with-
 in twenty-four hours a dead worm was discharged
 in two parts, the whole measuring twenty inches in
 length. The patient soon died, and on a post mortem
 examination, it appeared that this worm had when
 small, passed from the stomach to the liver, through
 the common duct, and thence having sumptuously
 until it committed great depredations on that or-
 gan, it retraced its steps, passing again through
 the enlarged duct into the stomach, from thence
 out of the system. Although worms thus found in
 the human body, are not readily recognized as
 belonging to any species with which we are ac-
 quainted, situated exterior to it; yet from their
 slight resemblance we are warranted in conclu-
 ding that they do belong to certain species with
 which we are conversant, and the peculiarity
 of their shape, and size may be explained by con-
 sidering the difference between a situation
 in, and one out of the human body, with regard

to the origin of those worms, which have been described, as belonging particularly to the human body, we have but little certain knowledge. It is said by Doct Parr that they seem to be coeval with our existence, and a part of our constitution; this seems also to have been the opinion of Doct Rush, as high as we can judge from his manner of reasoning with respect to the effect they have on the health of the human system; That there is an abundance of matter in the faeces, on which worms might subsist, from the first formation of the ovum, is very probable, but from whence are derived the principia or rudiments? To this question we have no decisive answer. The theory of the external origin of worms, has been supported with some plausibility by those who have adopted it. By Good, it is contended that all worms originate externally or exist primarily out of the system - that from the immense number of an imaleculis or eggs, deposited and floating in the atmosphere, a certain

portion is taken into the stomach, where finding a proper nidus, they are warmed into life, and nourished until they grow to the form and size in which we find them. The reason why they appear more frequently, and in larger numbers in children than in adults is accounted for by supposing that their bowels contain a greater quantity of mucus, which is believed to be favourable to their generation and development. This theory has been objected to, from the consideration of the fact, that worms, precisely of the same appearance as those which have been found in the alimentary canal, have never been discovered to exist out of it. But animals bearing a very close analogy to those discovered in the human body, have been found to live exterior to it; thus Linnæus found the *taenia solium* to exist in muddy springs "though much smaller" than usually discovered in the human intestines. Doct. Baer asserts that he found the *ascarides* in a spring in the neighbourhood of Gorch. Lister

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The first thing I observed when I stepped
out of the train was the cold. It was a
sharp, biting cold that seemed to penetrate
my very bones. I had heard that the
weather in the north was harsh, but I
had not realized just how cold it would be.
The wind was howling, carrying with it
snowflakes that stung my face. I pulled
my coat tighter around me and tried to
keep my hands warm. The train had
stopped at a small, deserted station. There
was no one else there, not a soul to
ask for directions or help. I was alone
in a strange, cold, and desolate place.
The train was supposed to be the fastest
way to the north, but it seemed like it
was a trap. I had been told that the
north was a beautiful land, full of
wildlife and natural beauty. But now
I was here, and I was alone. I had
no one to turn to, no one to help me.
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way to the north, but it seemed like it
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affirmed that he had also seen the same worm infesting the surface, as well as the lower part of the rectum; and would it be any great stretch of credulity to believe that the trees and common earth worm belong both to the same family and that the difference in their appearance, is occasioned by the difference in their habitations? Another argument which has been advanced against the external origin of worms, is, that they have been found in the abdomen of the foetus: - if this be the fact, I know of no hypothesis which will satisfactorily account for their origin, and we are in danger of being under the necessity of resorting to the theory of Equivocal Generation.

General symptoms and treatment

When we consider the universal sympathy which exists between the alimentary canal, and the remaining portion of the system, we shall not be surprised, that some of the most distressing

and fatal diseases, are occasionally produced by worms accumulated in, and irritating it. That worms do occasionally remain for a considerable length of time in the alvine channel without producing disease, we have no reason to doubt; but from thence are we to infer, that they are absolutely necessary to preserve health, and are never the primary cause of disease. It would appear by the reasoning of Doct Rush and Parr, that in man and most other animals they form a mean of maintaining the proper health, and are a regular part of the economy of perfect life. Rush relates several facts, by which he attempts to prove that worms exist more frequently in healthy and robust children, than those of a weakly and depraved habit. It is, however, asserted by Doct Parr and appears also to have been the opinion of Rush, that their formation is assisted by an unnatural accumulation in, and vitiated state of the stomach and intestines, and are therefore more common in children and

cachectic patients, & of the last mentioned persons, are most subject to the accumulation of worms, we have reason to believe they form part of a diseased, rather than of a healthy constitution—neither can it be said that the healthy are chiefly affected; this applies to animals as well as vegetables, in both the most imbecile are most affected, and if they do occasionally exist in large numbers, and for a considerable time, in strong healthy persons, without producing disease—it is because they being stronger are more able to bear irritation, and consequently disease is not so easily induced.

There is scarcely a practitioner who has not at some period of his life, witnessed the most dangerous diseases excited or kept up by worms, "The evils which hence arise" says "Becherdeu" and cease on their expulsion, are vertigo, torpor, head-ache, disturbed dreams, sleep broken off by fright and screaming convulsions, feverishness, thirst, pallid hue, bad taste in the mouth, offensive breath, cough, difficult res.

piration, itching of the nostrils, pain in the stomach, nausea, squeamishness, voracity, leanest statures, itching of the anus towards night at length defecation of filth and mucus." To these may be added occasional flushing of face, swelling of the lips, dilatation of the nostrils, livid circle around the eyes, contraction or dilatation of the pupil, swelling or distention of the abdomen. No one symptom which has been mentioned is pathognomonic of worms, but several of them taken together form a tolerable sure guide. The tænia has the most injurious effect upon the human system, though even that has been known to remain in the body, until it had attained considerable size, without the persons manifesting a single symptom of it, and it was only known to have a being after expulsion. The symptoms of this worm are not very distinct from those of the tæxæ; it is attended with a gnawing sensation at the pit of the stomach, accompanied with weight, and the motion of some living animal in the abdomen, which occasionally swells and

again returns to its natural size, the appetite is variable sometimes very good, at other times depraved, faint spells frequently occur, the countenance livid, pupils dilated, vertigo confuses the head and excites vomiting, emaciation of the body, coldness of the viscera of the abdomen, the legs vacillate, and the whole body is sometimes convulsed, "An anomalous symptom of tænia is a sense of extreme tension of the nose;" Small substances are sometimes discharged, resembling gourd seeds, and are said to be portions of the marginal papillae of the worm. — The symptoms which indicate the presence of the *Lumbricoides*, are intestinal irritation, diarrhoea alternated with costiveness, palpitation of the heart, muscular debility, a pale head and occasionally flushed countenance, itching in the nostrils, foetid breath, disturbed sleep during which the patient grinds his teeth, and sometimes suddenly starts as if frightened, interrupted speech, a frequent, hard and often intermitting pulse, a dry and spasmodic

cough; appetite irregular and depraved, being sometimes feeble, at other times very voracious, abdomen swelled and hard, swelled lips, particularly the upper one, watery mouth, a livid spot around the eye, dilatation of the pupil, which is, however, sometimes contracted, a periodical headache and slow fever, the pulse being hard, tense and corded, and there is a disposition to spasmodic affections. A pricking and rending, pain in the umbilical region, colic with a rumbling noise in the intestines, are said to be symptoms peculiar to this species of worm; The lumbricoides are said to be able to insinuate the sharp cutting part of their head, into the coats of the intestines, or even to perforate that viscus— from attempts to do so, is probably the cause of the last mentioned symptoms.— The characteristic symptoms of the ascarides, are, an itching, and pricking, sensation in the ~~in the~~ lower part of the rectum; they are commonly found in conglomerate masses, and

notwithstanding they are situated near the extremity of the rectum, they are not easily removed from their habitation; they sometimes excite inflammation and swelling of the anus, tenesmus, and bloody stools; to the above symptoms may be added all those that denote the existence of the other species of worms. — The trichocephalus is said to be distinguished by no peculiar symptoms.

When we commence the treatment of diseases occasioned by worms, we have two indications to fulfil, first, to use those medicines which have been called anthelmintics or vermifuges, which either destroy worms, or drive them from the system by qualities that torment or distress them, secondly, To employ such tonic medicines, as shall increase the general strength of the body, and more particularly of the alimentary canal. In some cases we may simultaneously pursue both these indications, in others we cannot, and our proceedings must be governed by the circumstances of the case, as in any of the

subjects of worms are also the subjects of debility,
 by administering anthelmintic medicines (the
 most powerful of which have a tendency to decre-
 ase, rather than increase the tone and energy of
 the stomach) we weaken the alimentary canal,
 and thereby render it a more congenial habitation
 for these vicious intruders. In cases of great debil-
 ity, it will therefore be most advisable to keep the
 bowels loose, and by a proper administration of ton-
 ic medicine, attempt to revive the decayed energy
 of the system, until by degrees the worms may be
 safely evacuated; by keeping the bowels loose, we pre-
 vent that accumulation of slime, which is so fa-
 vourable to their development; and in cases where
 there is evidence of such accumulation, the most
 approved practice is to give very active purga-
 tives, which if they do not remove the worms, leave
 them more susceptible to be acted upon, by the
 proper vermifuge medicines. Of these we have
 an extensive list; I shall now proceed to mention

the most important;— They have been divided into two classes, first, those which act upon wounds externally by some mechanical or chemical property, and secondly those which destroy them by some narcotic or internal means. In the first class are ranked all the drastic purgatives, turpentine, oil of olives, sulphur, Petroleum, and sea salt, tin oxide quicksilver, the lunar pille of Bourhaave and the prickly down of the cowage. In the latter class we may place the male fern, hellebore, fox-tail hellebore, tobacco worm seed or artimisia Santonica Linn, bark of the bulge water tree and of the cabbage tree or *Geoffroya inermis*; the *Spirigelia* and *Scabiosa Indica*; to these have been added *Cuscutella tansy*, *res.* *Savine* and *dit-*
tany, which as anthebmintics are hardly worthy of notice. The cathartics appear to act merely as evacants, the best of these is said to be castor oil "given in large doses over night and worked off the next morning with castor oil. Scammony—

gamboge, elaterium, colocynth &c, are useful remedies, particularly in children, whose intestines contain a larger share of mucus, than those of adults; colocynth uniting with its cathartic property a bitter principle, was at one time supposed to be peculiarly serviceable in cases of worms, but we are informed by the experiments of Redi that it does not prove deleterious to them. In an attack upon worms, brisk cathartics should always precede other remedies. — On the Oleaginous preparations, there is little dependence to be placed, the terribinthinatus excepted; olive and castor oil can scarcely be of service; they may mix with the slime in which the worms are burrowed and by their purgative power carry off a portion of it; it has been suggested that they may be serviceable by irritating the body of the worms, and blocking up the stigmata through which they respire; if they act in this manner

they are evidently better adapted to those worms, which inhabit the upper part of the canal, where they act immediately and without dilution; The terebinthinal is entitled to more confidence, they are said to act as purgatives upon the intestines, and external irritants upon the worms exposed to their influence; the rectified oil of turpentine is the preparation now in use; It is said to be of singular service in cases of vermicular ascarides, which seldom resist its influence when given in sufficiently large doses to reach the rectum, or when injected into that organ. The albino worms, or those which inhabit the stomach and upper part of the intestines, are probably, more speedily removed by this than any other remedy in our possession; The periodical works furnish us with numerous instances, where even taeniae have been destroyed by it, and as they are the most difficult to dislodge from the human in-

testines, we may consider it as a valuable remedy in every description of worms; it is given in doses of from half a drachm, to a drachm, to infants, and from an ounce to an ounce and a half to adults, alone or with peppermint or other distilled water. The best medium for children is milk. It is said that turpentine given in small doses, is more likely to produce strangury, and other disagreeable symptoms, than when administered in doses sufficient to have a purgative effect. — — — — —

Sulphur. The sulphurous and harrogate waters, seem to act in the same manner with the essential oil of turpentine, they are double irritants, and probably goad the worms while they stimulate the intestines. — — — — —

Sea Salt. Concentrated sea water, or a solution of sea salt in common water, has been found in many instances to be a good remedy, in cases of worms; it acts on the same double principle as

the above mentioned articles, though probably with more energy; it is particularly recommended where liced, or the larvae of any variety of erratic worms are to be combatted, as we are nearly certain of its proving a cure, from the deleterious effect it had on them, ~~when~~ when exposed to its influence out of the body; In most cases of ascarides, it is better to administer the brine in form of injections, but where there is reason to believe that those worms inhabit the stomach and neighbouring intestines, it will be more effectual if given by the mouth.

Sin. The filings of this metal, have long been considered as possessing an thelminthic properties; on what its vermifuge virtues depend is not very intelligible, neither is it considered as an efficient remedy; by Doct. Stolon its beneficial effects were ascribed to a slight combination of arsenic; but it has been ascertained that the metal in its most pure state, is equally successful, and its effects are gun-

usually supposed to be altogether mechanical.
It is administered in the dose of from three drachms
to an ounce in trache.

Rude Quicksilver, If this metal has any
effect upon worms, it is undoubtedly mechan-
ical. The gray mucilage of mercury, or the lu-
nar pile of Boerhaave is supposed to stimu-
late the tender skin of the worms, exposed to its
influence, "to a painful and spastic con-
traction."

Solichol pruriens, The prickly and pungent
down of the cowage is, perhaps, the most powerful
and successful of the irritants. This plant is
a native of Sarcia; its powers as an anthelmintic,
have been detailed by Thos. Cochrane and Ban-
croft, "who first suggested it" says Bancroft "I
know not, but its efficacy is indisputable. The
part used is the setaceous hairy substance
growing at the out side of the pod, which is
scraped off and mixed with common Syrup,

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or molasses into an electuary. The dose a teaspoonful to a child and double to an adult, in the morning fasting and repeated the two succeeding mornings, after which a dose of rhubarb is usually subjoined. The courage is said to be a favourite remedy among the planters in India; "they administer it to their slaves in general, and particularly to the children of their slaves" who after taking one or two doses generally evacuate an immense number of worms, mostly the tires and long thread worm; irritating, as these specula are to our own skin, involved in the viscid matter in which they are usually administered, they are said not to form an inconvenient medicine; In cases of vermicular ascasides the best mode of administering them, is in mucilaginous injections — — — — —

of those anthelmintics that operate on worms, by attacking them internally, and destroying their

life, it may be observed that the most striking prop-
 erties of almost all of them, is, great pungency and
 bitterness, but that their vermifuge power does
 not depend on bitterness alone, is sufficiently pro-
 ved by the experiments of Redi, before mention-
 ed; for by those we learn, that even the intense bit-
 ter of the colocynth does not destroy worms, and
 Doct. Cecllin was of the same opinion with regard
 to the *artemisia san-tonica*, universally called worm
 seed, and at one time supposed to be a specific
 against the long worm; in speaking of this arti-
 cle Murray in his *mat. Med.* says (of the *semen san-
 tonicum* (worm seed) according to Baglivi's exper-
 iments, operates more quickly, it must be by some-
 thing else than its bitterness that its seeds operate.
 This is not however at the present day considered as a
 very efficient remedy; on the same footing stand
 tansy, rue, savine, the seeds of the *chrysosodium*
anthelminticum or worm grass, angelica,
 and many other leaves and seeds of slighter spe-

efficacy, which have had their day, and are almost forgotten; they have all more or less a bitter principle in combination with some acriid quality, which exacerbates the energy of the bitter and renders it doubly obnoxious to these internal parasites--

The hellebores, helleboratus, and cicutilla, which is usually considered a species of veratrum or white hellebore, are pungent bitters, and very powerful cathartics; on the latter quality it is supposed their usefulness as vermifuges chiefly depends, they are very active anthelmintics, but so violent in their operation as to preclude them from common use, for they often do more mischief than the worms which they are intended to expel; The dose for a child from two to four years old two grs at eight five grs from eight to twelve ten grains.

Tobacco, In addition to the qualities of the above described articles, this is a deadly narcotic poison, it is hence a very active vermifuge, but like the hellebore it is too violent to be used, except as

an injection, in which form it is very useful in ascarides. — — — — —

Camboge. This is a very violent drastic cathartic, removing all with which it chance to meet; it is slightly bitter, possessed of considerable acrimony, and is considered as a specific against the tape worm. — — — — —

Polypodium filix mas, or male fern. It is difficult to determine on what the vermifuge power of this article depends, to the test, it discovers but little activity; it is sweetish, and may be taken in very large doses, and as it is incapable of expelling worms without the aid of cathartics, it was supposed by Cullen that it possessed no independent anthelmintic property; we have examples, however, of tanniae having been discharged whole, or in large portions after exhibiting several doses of this medicine, without giving a cathartic. to this purpose we have the evidence of Doct Parr — — — — —

Cloves of Garlic, it is said have been used with advantage for expelling worms. — — —

The Aloetic preparations acting chiefly on the rectum, as might be supposed, are very useful in cases of ascarides; a combination of aloes with canella bark, as in the hira piera, is said to be advantageously administered in cases of lumbricoides. — — — — —

Geoffroya inermis. This article is a native of the W. Indies; the bark is employed in decoction, infusion or extract, sometimes also given in powder; Its vermifuge qualities depend on no sensible properties; the decoction which I believe is generally used, has a sweetish mucilaginous taste; when given in large doses, it vomits and purges violently; Its vermifuge properties are said to be better displayed, when given in doses that lay easy on the stomach — than when given so as to purge. — — — — —

Melia Azedarach This article is by some prac-

tioners consider^{ed} a very good remedy, particularly in combating lumbricoides; it has also been prescribed in cases of other worms; it is administered in saturated decoction of which a small tea-spoonful is a dose for an adult. — — —

Camphor has been prescribed in every species of worms; it is said to be most valuable for the expulsion of the lumbrici. — — —

Spigelia. There are two species of this article, the *Spigelia marilandica* and *Spigelia anthelmintica*. They are both very acrid and narcotic medicines, given in large doses, as above two drachms, They are said sometimes to purge violently, at other times producing vertigo, dimness of sight, drowsiness, and clonic convulsions, and sometimes producing all together; and the same violent effect is supposed to be excited in the parasitic worms, as in the patient, and it is not strange that they should fore-sacrifice to them or endeavor to save themselves by a timely

and rapid escape. The Spigelia is given either
in powder or decoction, the former in doses of from
five to ten grains to a child; in decoction $\mathfrak{z}\mathfrak{ss}$
united with some brisk cathartic. — —

